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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,283	04/11/2006	Kazumi Fujimoto	NNA-108-B	9454

48980 7590 06/29/2009

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EXAMINER	
BITAR, NANCY	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
06/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/575,283	FUJIMOTO, KAZUMI	
	Examiner	Art Unit	
	NANCY BITAR	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 March 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/13/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's response to the last Office Action, filed 12/9/2008, has been entered and made of record.

2. Applicant has amended claims 3-6,12-15, and 19-30. Claims 1-30 are currently pending.

3. Applicant's arguments, see pages 22-28 , filed 3/10/2009, with respect to the rejection(s) of claim(s) 1-30 under 35 USC 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Furukawa et al (US 2005/0152580)

Examiner Notes

4. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is

respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,466,684) in view of Furukawa et al (US 2005/0152580)

As to claims 1 and 2, Sasaki et al teaches an apparatus for detecting objects in one or more images captured by an image pickup device mounted on a vehicle (image pick up 21, figure 2), comprising: memory (image processing,22, figure 2) on which is stored pixels of at least one image captured by the image pickup device; and a controller (computation,23, figure 2)operatively coupled to the memory and adapted to compute velocity information for each pixel in the image; extract those pixels having a velocity component based on the velocity information; detect oblique lines composed of those extracted pixels having a velocity component; and generate a signal indicative of a road boundary in the image based on the oblique lines (column 9 lines 1-15 and lines 51-64 and column 10, lines 50-57).Sasaki teaches the controller is further adapted to judge that oblique lines in the image are road boundaries when the vehicle is traveling

and the oblique lines are positioned on the image with bilateral symmetry and different velocity directions (column 8, lines 6-11). Sasaki further discloses the detection of objects and generates a collision danger (column 16, lines 60-64, column 17,lines 3-10). Sasaki discloses provides an alarm to the user (column 18, lines 29-37). While Sasaki meets a number of the limitations of the claimed invention, as pointed out more fully above, Sasaki fails to specifically teach extracting those pixels having a velocity component based on the velocity information

Specifically, Furukawa teaches an image receiving unit configured to receive time-series images shot by the image shooting device; an area setting unit configured to set a plurality of processing areas in the images received by the image receiving unit; an object motion detector configured to detect objects moving within the areas set by the area setting unit and to detect motion trajectories of the objects; an obstacle candidate detector configured to detect the respective objects as obstacle candidates if a direction of a line connecting between the objects is a predetermined direction; and an obstacle determining unit configured to compare the motion trajectories of the respective obstacle candidates and to determine the obstacle candidates as an obstacle if the motion trajectories of the obstacle candidates satisfy a predetermined similarity condition. Moreover, Furukawa teaches a device for analyzing the pixels of objects in the peripheral field of view of an image device mounted on a vehicle in order to determine from their relative velocity that they are a potential obstacle. It would have been obvious to have combined the controller Furukawa et al with the controller of Sasaki when seeking a system that better avoid potential collisions and increase the

accuracy of object recognition. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 3, Sasaki et al teaches the apparatus of claim 1, wherein the controller is further adapted to judge that oblique lines in the image are road boundaries when the respective slopes of the oblique lines decrease from the center of the image toward the outside of the image (figure 3 and 4).

As to claim 4, Sasaki et al teaches the apparatus of claim 1, wherein the controller is further adapted to detect a change point where the velocity direction of an oblique line changes, and to judge that the change point as the balance point of the pitch generated by the movement of the vehicle (figure 13; column 13, lines 4-36).

As to claim 5, Sasaki et al teaches the apparatus of claim 1, wherein the controller is further adapted to identify moving object that is approaching the predicted path of the vehicle by grouping the pixels having velocity information pointed from the side toward the predicted path of the vehicle from among the extracted pixels; and to generate a collision danger signal indicative of the risk of collision between the vehicle and the moving object (column 16 lines 60-64; column 17 lines 3-10 , column 18, lines 29-37)

As to claim 6, Sasaki et al teaches the apparatus of claim 5, wherein the controller is further adapted to transform into a real space road model the oblique lines judged as the road boundary and the moving object and to determine the risk of collision between the vehicle and the moving object based on the relative positional relationship between the road boundary and the moving object as established in the real

space road model (converting the early image on the basis of a predetermined optical arrangement of the image pick-up means onto an x-z plane in parallel to a road surface in a real space to acquire a road surface image; means for computing a moving distance of one's own vehicle between the two timings on the basis of a time interval between the two timings and speed information of one's own vehicle, column 9 lines 1-15 and 51-64)

As to claim 7, Sasaki et al teaches the apparatus of claim 5, wherein the controller is further adapted to generate the collision danger signal at one of a plurality of values corresponding to collision risk levels (on the basis of the optical flow thus detected, the degree of danger ahead of the vehicle is evaluated (step S5). If it is decided dangerous, a warning signal for warning a driver is issued to a warning device 24 (step S6), See figure 3).

As to claim 8, Sasaki et al teaches the apparatus of claim 5, further comprising an audio alert operatively coupled to the controller and activated by the collision danger signal (The warning to the driver is carried out on the basis of the evaluation of the degree of danger in the processing in step S5. The arithmetic unit 23 in the environment monitoring system according to the present invention controls the warning device 24 in accordance with the degree of danger acquired in step S5 so that an alarm is sounded to call a driver's attention. In this way, this assists the limited recognition of a human being, thereby preventing a danger of a serious accident or the actual occurrence thereof, Column 16, lines 59-67; column 18, lines 29-45).

As to claim 9 , Sasaki et al teaches the apparatus of claim 5 further comprising an automatic breaking device operatively coupled to the controller and activated by the collision danger signal (control the operation of the brakes, abstract column 18, lines 29-37).

The limitation of claims 10-18 has been addressed in claims 1-9 .

The limitation of claims 19-30 has been addressed above. Sasaki teaches providing a velocity information computing means, pixel extraction means, oblique line detecting means and boundary line detecting means (column 8, lines 6-11; column 9, lines 1-15 and 51-64 ; figures 3-4; see also Furakawa et al abstract)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nancy Bitar/
Examiner, Art Unit 2624

/Vikkram Bali/
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